of observation. The dosages, which varied from 1 to 4 mg., are shown in Table II. The time to death was recorded, and each animal was submitted to post-mortem examination.

TABLE II.—*Treatment with Aureomycin of Experimental Melioidosis in Guinea-pigs*

Infecting Dose of <i>Pf. whitmori</i>	Days to Death					
	Untreated		Treated			
			Daily Dosage of Aureomycin			
			1 mg.	2 mg.	4 mg.	
500,000,000	4	4	4	5	—	—
50,000,000	4	4	4	6	—	—
5,000,000	4	5	4	4	—	—
500,000	5	—	—	—	8	—
50,000	4	—	—	—	5	—
5,000	5	—	—	—	9	—
500	7	7	—	—	5	10
50	4	7	—	—	4	7
5	8	11	—	—	8	10

Aureomycin was given intraperitoneally in divided doses morning and evening beginning on the day of infection and continuing until all the animals were dead.

It will be observed that the strain proved to be of very high virulence. With the larger infecting doses death usually occurred on the fourth day, but with the smaller doses it might be delayed as long as the 11th day. The lesions observed were typical of experimental melioidosis, and consisted of a large abscess at the site of inoculation, suppuration of the regional lymph glands, general subcutaneous congestion, peppering of the liver and spleen with yellow necrotic areas, and multiple abscesses in the lungs. It is clear that there is little difference between the treated and the control group. There were no survivors in either group, and the slightly longer survival-time of some of the treated animals may well have been due to chance. The lesions in the treated animals did not differ from those in the controls, and the infecting organism was readily isolated from the spleen and glands.

Although it is possible that larger doses of aureomycin might have had some beneficial effect, the results of *in-vitro* tests do not suggest that this is probable, and the dosage and spacing were in fact the same as those found effective by other workers in the treatment of such infections as Weil's disease.

Summary

Pfeifferella whitmori was found not to be inhibited *in vitro* by concentrations of aureomycin lower than 6.3–12.5 µg. per ml. The course of experimental melioidosis in guinea-pigs was not materially influenced by treatment with aureomycin started at the same time as infection.

I have to thank Mr. B. Madge for efficient technical assistance.

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The biennial conference of the Transport and General Workers' Union recently carried a resolution (*Scotsman*, July 14) requesting the Government to keep all aspects of their administration under constant review, with particular reference to pensions and the National Health Service, with the object of introducing improvements on a progressive basis as and when opportunity offered. The national secretary of the union's Government and municipal group said they had informed the Minister of Health of instances where they knew that certain people had been taking advantage of the National Health Service to benefit themselves, their friends, and their poor relations.

INTRACTABLE PAIN*

BY

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It is impossible to embark on a discussion on pain without being brought up with a bump against the insoluble body-mind problem. All experience, of course, has its origin in sensory data. Sensation becomes perception; percepts are further elaborated into concepts; concepts cluster together to form ideas and ideational constellations; and all these events undergo mnemonic engramatization—i.e., the formation of memory traces. So far, it will be noted, I have been able to summarize experience in psychological terms only, without any reference to the material apparatus involved in the process. Nevertheless it is a common habit of mind to think of pain in physical terms and to draw an artificial distinction between what one is pleased to call "real" and imaginary pain, oblivious of the fact that all pain, whatever its most peripheral source of origin, is in the final analysis a psychic event.

If the words "pain" and "suffering" are mentioned outside any given context it is impossible to decide whether mental anguish is meant or pain arising direct from the body; and this is not a case of one *noumen* or descriptive category being correct in one context and in another being used as an analogue. The term "pain" covers both kinds of experience with equal justification, indicating, I would maintain, that, phenomenologically and semantically, mental and physical pain are so closely allied as to be almost identifiable one with another.

If one is compelled to think monistically it is wiser to regard pain from the psychic aspect and to disregard its material substratum, and to reserve for consideration in neuro-physiological terms the *type* of pain experienced. One can talk of a burning sensation, a boring sensation, a sensation of weight or pressure, a shooting or radiating sensation, a vibrating sensation, and a host of other sensations, all of which can be registered as painful, but not necessarily so. What converts such a sensation into a pain is, in a specially narrow sense, psychic rather than somatic, whatever fibres conduct the original stimulus. In other words, pain is an emotional as well as a sensory experience. Pain divorced from its emotional component is very different from the total experience, as is well shown after leucotomy. The emotional appreciation of pain probably depends on intact memory and unimpaired foresight; therefore leucotomized persons may be said to feel pain in the same way as an undomesticated animal does. When we empathetically suppose that the experience of pain in humans and animals is identical, we are likely to be guilty of the pathetic fallacy.

I believe that there is another important difference between pain as a sensory experience and pain as an emotional one. Pain as sensation is correctly located in the somatic segment in which it is generated in accordance with intact neural pathways. Pain as an emotional experience depends for its localization on the nature and integration of the body-image, in Schilder's sense. When the body-image is fragmented, the strangest things may happen: for example, one paraphrenic patient of mine complained that he heard voices in his stream of urine, and that the experience was extremely painful.

*A paper read in the Section of Neurology and Psychiatry at the Annual Meeting of the British Medical Association, Harrogate, 1949.

Message of Psychogenic Pain

There is no need for me to say anything here of the biological purpose of pain, except to remind you that, regarded teleologically, pain is a message to the total organism that all is not well and that a new adjustment is demanded. When the message has been delivered and adequately interpreted, pain has served its purpose and should be eliminated by all the means in our power. Psychogenic pain, using the word "psychogenic" in its narrowest sense, has a similar message to deliver—namely, that all is not well with the psyche—but the correct interpretation of the message, once it has been projected on to the body-image, is more often than not a matter of some difficulty.

Psychogenic pain, therefore, is likely to go on and on like a telephone bell that nobody answers because no one knows how to answer the telephone except a few trained psychotherapists, many of whom unfortunately, instead of answering the 'phone intelligently, go on repeating, parrot-like, a few stock phrases such as: "I am sorry you have been troubled . . . by the Oedipus complex." It is for that reason that a severe pain which does not respond to analgesic drugs is likely to be psychogenic or emotionally over-determined. On the other hand, a pain which is abolished by the subcutaneous injection of sterile saline is much more likely to be somatogenic, since physical pain, like any other sensation, is easily influenced by suggestion.

The terms "pains" and "penalties" go naturally together; in other words, there is a powerful emotional link between the ideas of suffering and of punishment. From this we can correctly adduce that the idea of pain is bound up with man's most primitive organization as a moral being. It is not only from sadistic motivations that people still cling so obstinately to the notion that corporal punishment possesses a value all its own.

The adult type of conscience is nothing more than the faculty of reason judging applications of moral values. However, there is another form of conscience which acts directly on the psyche—the unconscious conscience (i.e., the conscience with its roots in the unconscious, the *super-ego* of the Freudian schema). The super-ego, however speciously it may disguise itself, is archaic, ruthless, superstitious, pleasure-pain-governed, and swayed by Talion law. We are all influenced by our super-egos as well as by our conscience, but in mental health there is a reasonable degree of correspondence between these two regulators of conduct.

Problem of Guilt

All psychopathologists stumbled across the problem of guilt very early in their investigations. The very helpful concept of the super-ego was formulated by Freud with the idea of providing some kind of account of the "mechanics" of guilt and its resolution. Since few of us are saints—and, incidentally, the greatest saints have always been endowed with what the theologians call a "sense of sin"—the super-ego is constantly engaged in the task of restoring endopsychic harmony by means of "guilt-cancelling" devices. That is the reason, I think, why nearly all psychoneurotic symptoms are unpleasant (i.e., "painful" in the widest sense). I can think of no agreeable hysterical syndrome, with the possible exception of hysterical trance-states, and hysterical trance is amongst the rarest of psychic disorders. Even the habit of alcoholism, which is subjectively pleasant for the time being, is punished by agonies of alcoholic remorse and finally by painful social degradation.

Strangely enough, psychogenic pain as an isolated symptom of conversion hysteria is not very common. When it does occur it as often as not covers an underlying encapsulated psychosis. I well remember at the Cassel Hospital treating a man for the single symptom of agonizing pain in the tongue. I was successful in abolishing his pain by analytical methods, and patted myself on the back for my psychotherapeutic skill. I was less complacent when I heard that three months after he left hospital as a "cured" patient he committed suicide in a state of galloping involuntional melancholia. Neurologists not uncommonly come across cases of psychogenic trigeminal neuralgia, and the patients have at one time or another been treated by injection of the Gasserian ganglion. In my experience it is often wiser to allow these people to continue with their pain rather than to seek to remove it by analytical psychotherapy. Some people require a hair shirt or need to go through life with peas in their shoes.

Another complication of pain, regarded from its psychic aspect, is that the differentiation between pleasurable and painful stimuli is very indeterminate and variable, and that the point where pleasure passes over into pain (and vice versa) is therefore by no means constant. When the pleasure taken in pain is sexually tinged, even though the sexual factor is repressed and hence unconscious, the term "masochism" is applied. Persons endowed with an asthenic attitude to life—usually schizothymes—are more inclined to exhibit masochistic tendencies; persons with sthenic temperamental attributes are potentially more sadistic.

We can see, then, that pain of purely central origin can perform two sets of psychobiological functions: (1) regulate the balance between guilt and innocence by (unconsciously) self-imposed punishment, and (2) satisfy the conflicting claims of the masochistic and sadistic components of the personality-structure. From this it follows, as has already been inferred, that by no means all cases of psychogenic pain respond well or should be submitted to psycho-analysis.

The persistence of psychogenic pain or the psychically determined perpetuation of pain that was originally somatogenic not infrequently covers an already established drug addiction. In other words, people stick to their pains in order to provide a subjective justification for continuing to take the drug to which they have become habituated. This consideration should make every doctor very cautious in prescribing analgesic drugs. Pethidine, it will be remembered, was ushered in with a great flourish of trumpets on the grounds that it was non-habit-forming. A few months later, reports were coming in of grave pethidine addiction. Our attitude to pain is for the most part ambivalent; we wish to suffer (unconsciously, it is true), and at the same time we jib at pain and seek to avoid it. This ability to have one's cake and eat it is well shown in states of religious ecstasy—e.g., in the case of dancing dervishes who cut themselves with knives—when self-injury is accompanied by analgesia.

It must be remembered that many pains which are primarily psychogenic are secondarily somatogenic. For example, the colic associated with spastic colon is innervated in the usual way through the autonomic nervous system, although the spasticity of the colon itself may be psychically determined. The pain associated with nervous dyspepsia is another example; and there are innumerable others. It is for that reason that there is no incongruity in or scientific objection to treating these states pharmacologically as well as psychologically at one and the same time.

Two Other Factors

There are two more psychological factors which ought, perhaps, to be considered in connexion with the psychology of pain: (1) the influence of the pattern of culture, in the anthropological sense, on pain tolerance, and (2) individual differences. In many cultures—North-American Indian, for instance—the ability to bear pain without psychomotor expressions of suffering is regarded as an essential virile quality; and it would seem that in days gone by few males failed to pass the test. Among primitive peoples most initiation ceremonies for young boys include the infliction of pain, such as circumcision without an anaesthetic; and the boys are not allowed even to whimper. It would appear, too, that the Russians and the Chinese are traditionally somewhat insensitive to pain and suffering of all kinds.

The converse is equally true: certain patterns of culture permit psychomotor extravagance in the presence of pain. This is true, I think, of Jewish and Latin peoples. This in no way implies a characterological weakness in the individual, who is acting in accordance with his traditional reaction-pattern. I have already inferred that an individual's personality-structure determines his attitude to pain. Evidence of individual differences is also provided by the study of the psychoses.

I remember one schizophrenic boy who attempted suicide in the most bizarre and painful way: he procured a pound of meat (it was in the days when meat was unrationed), let it rot until it stank, expressed the juice, and injected it into his liver with a large, blunt, rusty hypodermic needle. When I questioned him after the long and painful illness which followed he denied that he had experienced anything unpleasant, although his pre-psychotic temperament had been hyperaesthetic. In depressive psychosis physical pain is often welcomed as a counter-stimulus to mental anguish; and manic patients are often so insensitive to pain that they have to be protected from injuring themselves just for the fun of the thing.

Hypnosis

Paradoxically enough, psychiatry has more to offer in the alleviation of physical suffering than in the treatment of psychogenic pain. Pre-frontal leucotomy as a means of abolishing the emotional factor of the pain experience has already been mentioned; and I do not propose in the limited space at my disposal to discuss the advantages and disadvantages of this procedure. It is to the much-neglected practice of hypnosis that I would turn your attention.

The treatment of the psychoneuroses by hypnotism had no sooner come into its own than it was eclipsed by Freudian psycho-analysis and allied methods of therapeutic procedure. And yet hypnotism still has much to offer, especially in the treatment of pain. In my student days there was a boy in hospital suffering from severe osteomyelitis whose daily dressings were so painful that he required a general anaesthetic on every occasion. I obtained permission to hypnotize him, and found that he was susceptible to deep hypnosis. Afterwards he had painless dressings daily under hypnosis.

It is, however, to Salter's work in America that we must look for further advances, provided, of course, that his work can be confirmed and repeated at will. Salter (1944) rejects the views of the psycho-analysts, who regard hypnosis as an artificially induced hysteria, and who suppose that the hypnotist must be unconsciously identified with one or other of the parental figures and that the hypnotized person automatically regresses to a state of infantile dependence.

According to Salter the hypnotic trance itself and all hypnotic and post-hypnotic phenomena are nothing more than conditioned reflexes, and he builds up a very strong case to support this thesis. If Salter is right the hypnotist's "suggestions" are to be regarded merely as conditioned stimuli. There is thus no reason why a person should not be trained to provide his own conditioned stimuli, thereby eventually eliminating the need of a "hypnotist" and abolishing the somewhat mystical concept of *raptot*. Salter has, it would seem, elaborated methods of training people in autohypnosis—in other words, self-conditioning—which seem to be sound and relatively simple. He defines autohypnosis as "the ability to induce upon oneself, the trance of sleeping hypnosis together with such of its phenomena as may be desired."

The advantages of autohypnosis over heterohypnosis are at once apparent: it is extremely useful for a person to be able at will to abolish existing pain (once its nature has been diagnosed), to cure himself of insomnia, to render himself completely deaf to disturbing noises, to increase his inclination to work, to eliminate stage-fright and other crippling forms of self-consciousness—and all this without having to establish a dependence on any psychologist.

In a world which is becoming increasingly totalitarian, when political-police investigators employ third-degree methods involving physical and mental torture as a matter of course, it may well be that the time has come for all Government "agents" to be trained "autohypnotists." Such an agent, when captured and "investigated," could make himself insensitive to pain of all kinds, could at will be deaf to all sounds, including the sound of his interviewer's voice, could send himself to sleep in all circumstances, and induce amnesia for matters which he did not wish to reveal in such a way as even to circumvent the use of "truth-drugs." It would indeed be extremely difficult, even with the most refined modern methods of "persuasion," to extract bogus confessions from political opponents.

Disregarding this last rather fanciful and sensational suggestion, it would at least seem that autohypnosis offers some people with intractable pain an easy and legitimate way out of their suffering without the necessity of having their brains pithed.

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Unesco proposes to publish later in the year a manual on the international exchange of publications. It intends to publish as an annex to this manual a classified list of institutions, including libraries, universities, scientific institutions, learned societies, etc., throughout the world, which are willing to exchange either their own publications or other publications which they have regularly at their disposal. Unesco has obtained a considerable amount of information concerning the availability of exchange material, but considers that it is still far from complete. All institutions which have so far not sent to Unesco details of their exchange material in one form or another are therefore asked to communicate immediately the following information to the Unesco Clearing House for Publications, 19, Avenue Kléber, Paris, 16^e: (a) Name and full address of institution. (b) Exact titles of publications offered. (In the case of duplicates offered for exchange purposes actual lists of duplicates are not required, but only a statement that lists of duplicates are available. Institutions possessing a catalogue of their own publications available for exchange are asked only to send a copy of the catalogue or to give a full bibliographical description of the catalogue.) (c) Institutions which wish to exchange their publications only under certain conditions are asked to state what these conditions are. Only information which reaches Unesco before Oct. 1 can be used in the manual.